

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the application of: Doane

Docket: TI-23064

Appln. No.: TBD

Examiner: TBD

Prov. Appln. No.: 60/173,286

Art Unit: TBD

Filed: Herewith

For: Methods for Measuring DMD Low Frequency Spatial Uniformity (as amended)

**LETTER TO OFFICIAL DRAFTSPERSON**

December 18, 2000

Assistant Commissioner for Patents  
Washington, D.C. 20231

Draftsperson:

Applicant submits five (5) sheets of formal drawings for the above-identified application. Please charge any necessary fees to the deposit account of Texas Instruments Incorporated, Account No. 20-0668.

Respectfully submitted,



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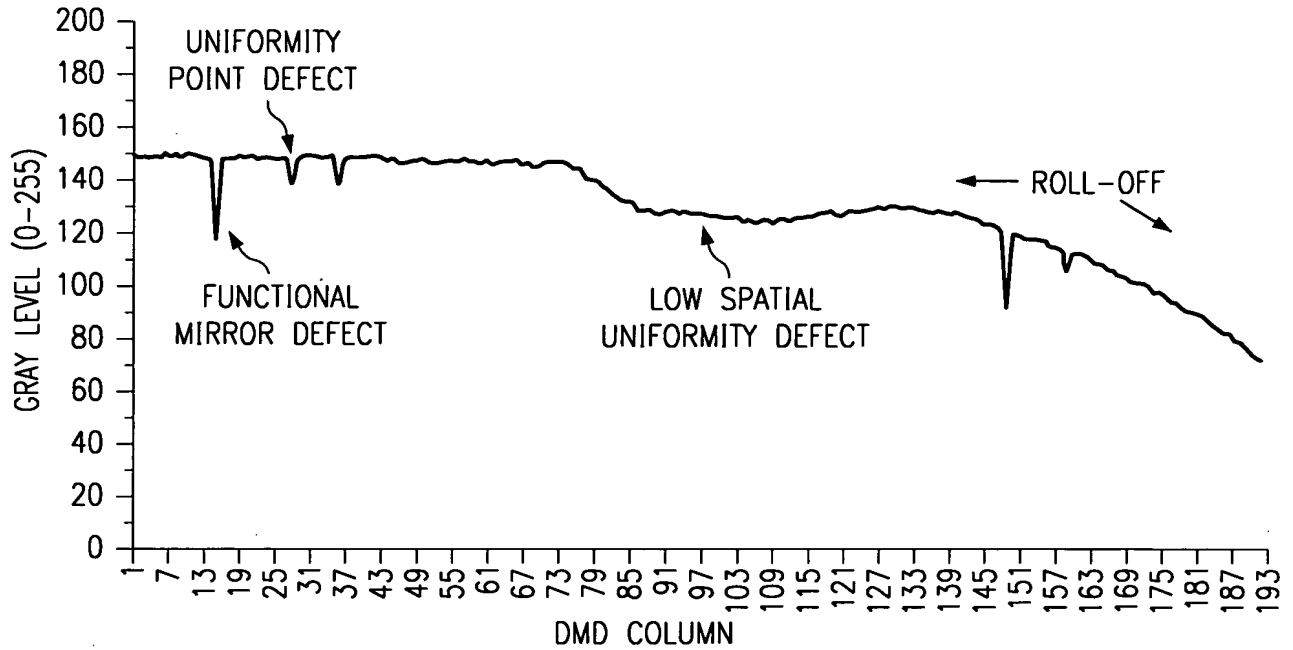


FIG. 1a  
(PRIOR ART)

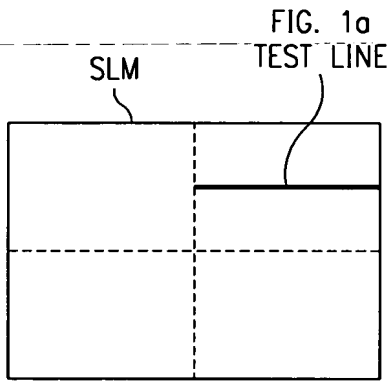


FIG. 1b  
(PRIOR ART)

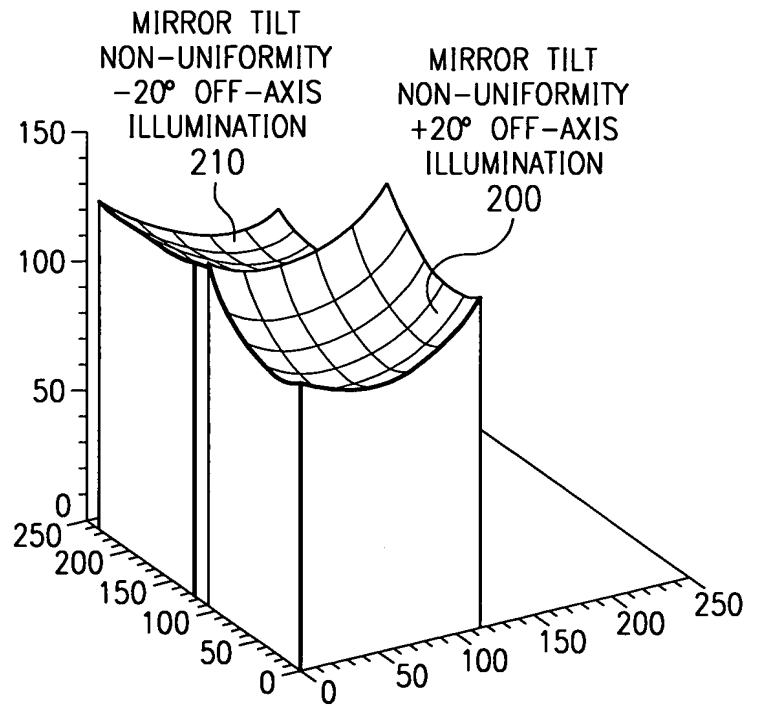


FIG. 2a

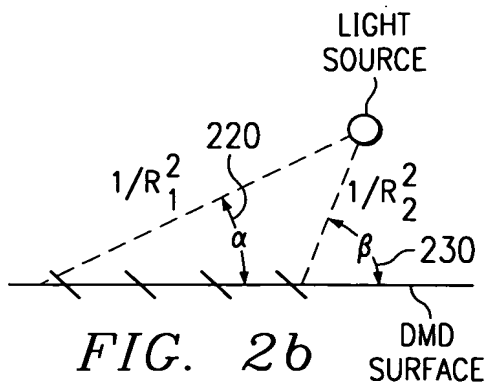


FIG. 2b

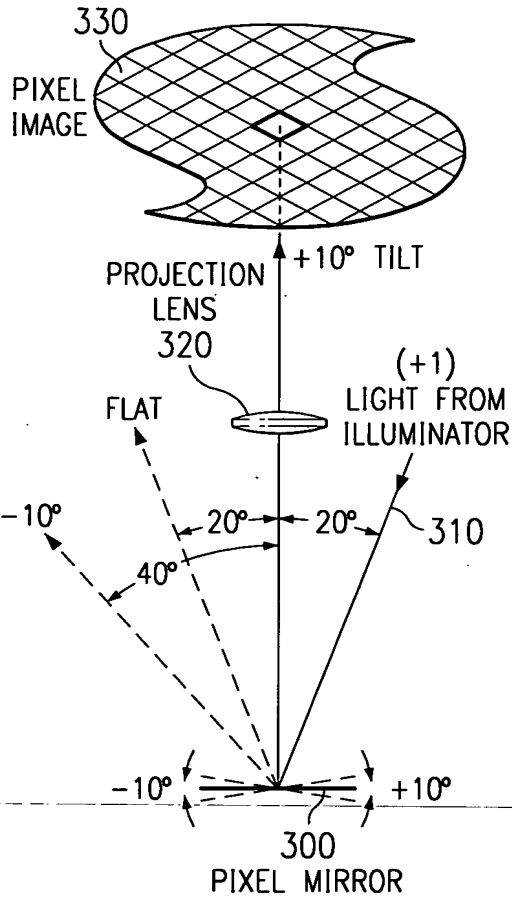


FIG. 3a

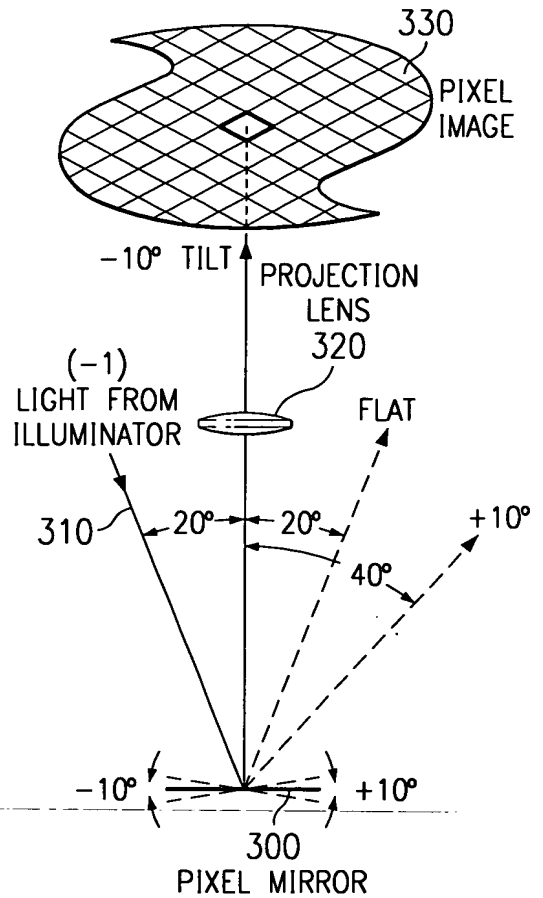


FIG. 3b

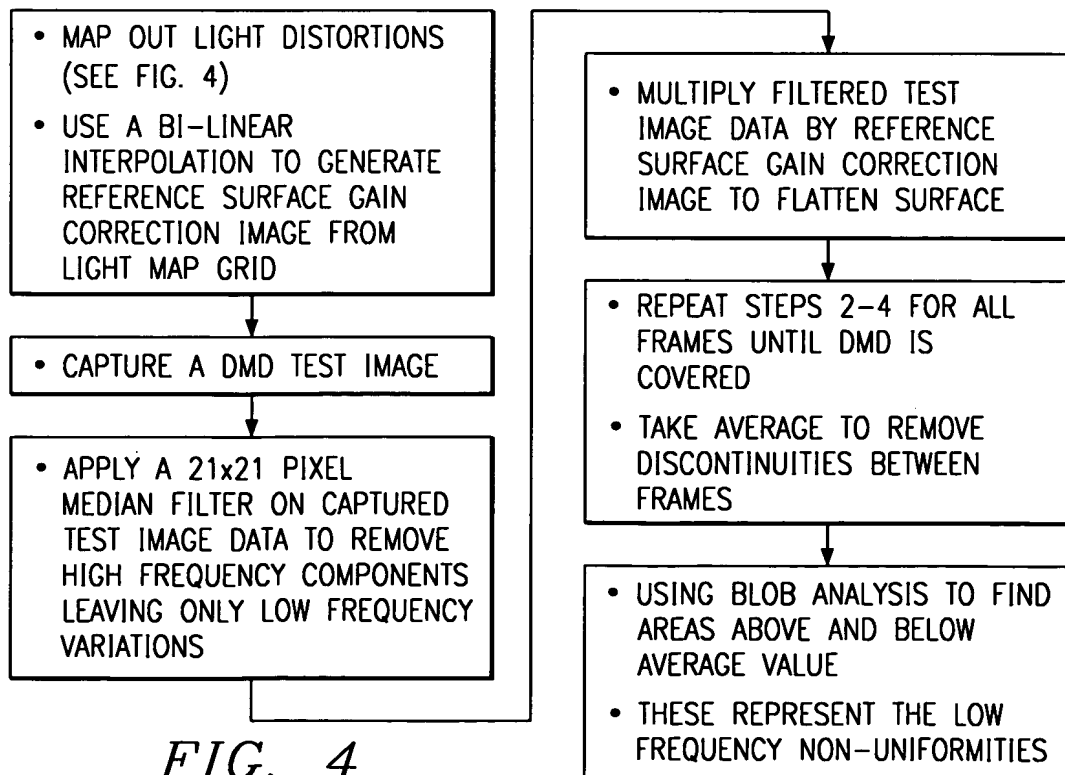
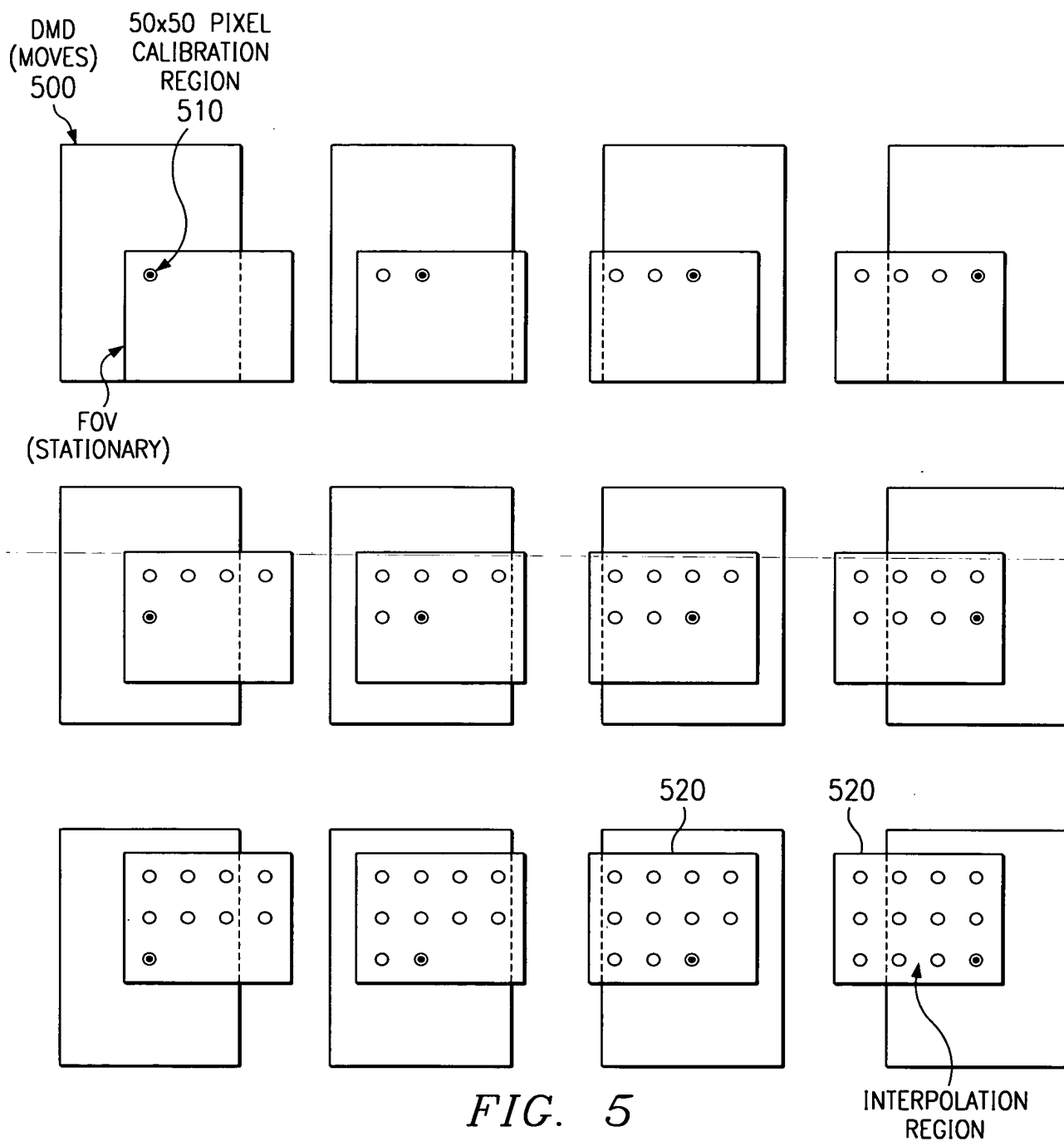


FIG. 4



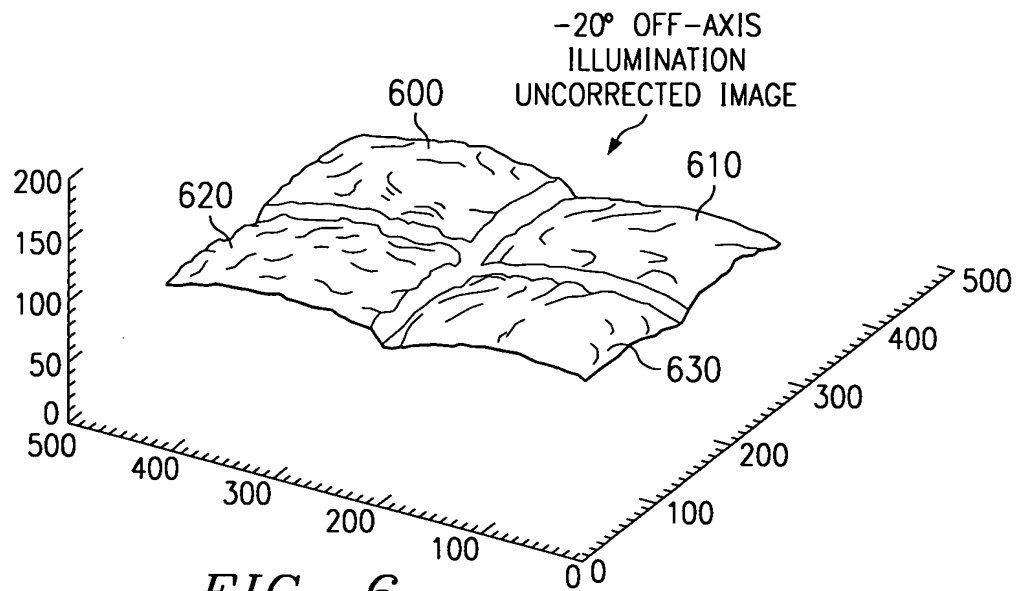


FIG. 6

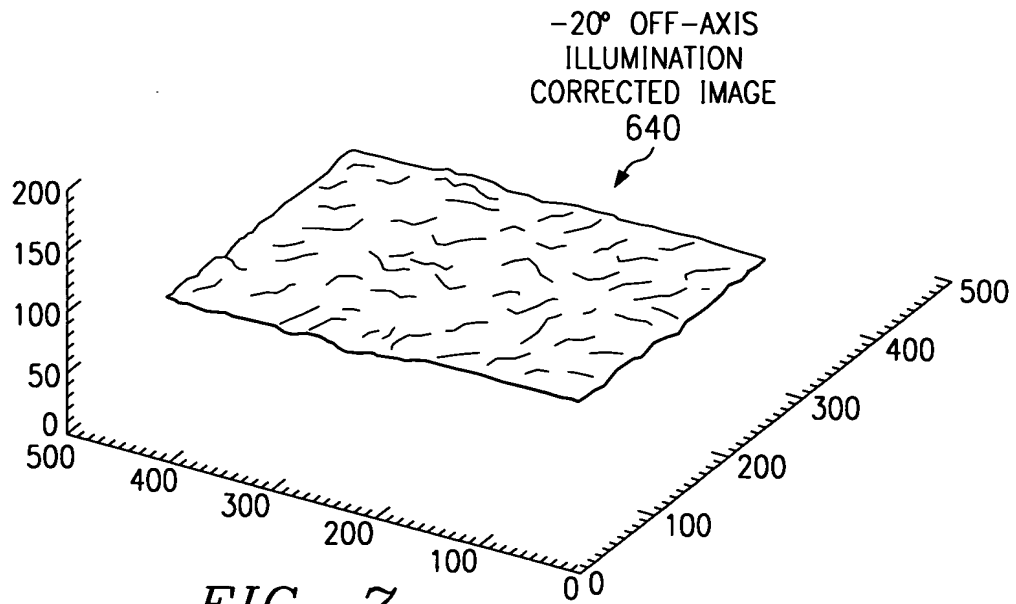


FIG. 7

- CAPTURE A DMD TEST IMAGE
- APPLY A 21x21 PIXEL MEDIAN FILTER ON CAPTURED TEST IMAGE DATA TO REMOVE HIGH FREQUENCY COMPONENTS LEAVING ONLY LOW FREQUENCY VARIATIONS

- PERFORM A 4x4 PIXEL LOWPASS FILTER ON THE IMAGE AND SUBSAMPLE TO OBTAIN A SMALLER IMAGE
- USE THE DATA FROM ROWS AND COLUMNS OF THE FILTERED IMAGE TO GENERATE A SERIES OF 2ND ORDER EQUATIONS

- USE THESE EQUATIONS TO GENERATE A REFERENCE SURFACE WITH ONLY 2ND ORDER VARIATIONS
- GENERATE A GAIN FACTOR CORRECTION IMAGE FROM THE 2ND ORDER FIT SURFACE

- MULTIPLY TEST IMAGE DATA BY GAIN FACTOR CORRECTION IMAGE DATA TO FLATTEN THE SURFACE

- REPEAT STEPS 1-5 FOR ALL FRAMES UNTIL DMD IS COVERED
- TAKE AVERAGE TO REMOVE DISCONTINUITIES BETWEEN FRAMES

- USING BLOB ANALYSIS TO FIND AREAS ABOVE AND BELOW AVERAGE VALUE
- THESE REPRESENT THE LOW FREQUENCY NON-UNIFORMITIES

FIG. 8

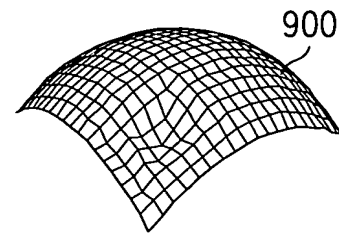


FIG. 9a

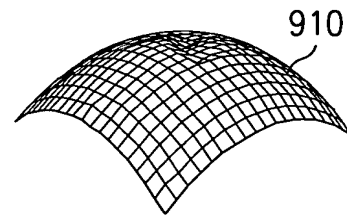


FIG. 9b

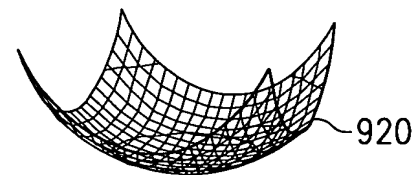


FIG. 9c

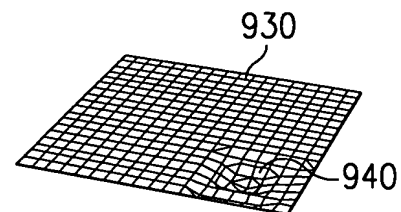


FIG. 9d

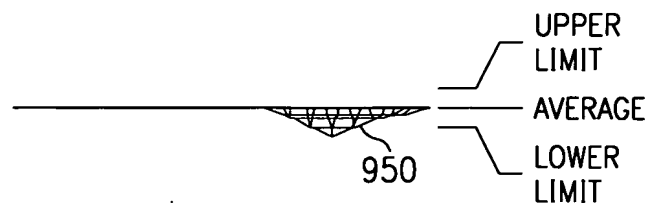


FIG. 9e